

*LCN Fund Full Submission*

# *Supplementary Answer Form*

Tick if this answer is Confidential: ☐

Tick if this answer has been provided verbally: ☐

Project code:	UKPNT205	Question Number	UKPNT205 - 23
Question date	17 September 2013	Answer date	19 September 2013
Submission section question relates to	2: Project Description		
Topic	Methodology		
Question	Please provide details of how you will quantify the effect of the trials, ie compared to a similar situation where there has been no intervention.		
Notes on question			
Answer	<p>The effect of both Trial 1 'energy saving' and Trial 2 'energy shifting' will be quantified in a similar way in terms of the methods used. The intention is to compare the findings from the intervention group(s) with the control group(s).</p> <p>In Trial 1, the energy saving from the intervention group will be compared with the within-trial control group. The robustness of the within-trial control group will be assessed against the external control group of British Gas smart meter customers. Because the participants will be randomly allocated to the intervention and control groups after they are recruited, the only difference between the two groups will be that one receives the energy saving intervention and the other does not. The difference between the two groups is therefore the effect of the trial and this will be measured.</p> <p>In Trial 2, comparisons will be made between the two within trial control groups to see if the providing participants with energy saving, and energy shifting interventions at different times has an effect on their energy shifting. The effect of both groups will be compared to the external control group to allow for determining the size of the effect, and to allow for</p>		

controlling for external effects such as energy price rises.

As with the answer to question UKPNT205 -21, analysis of the data obtained from the smart metering will then allow us to do statistical analysis to determine the size of the effect and its generalizability beyond the trial. In addition the data will be used for modelling work to look at wider network impacts.

**1. Statistical analysis of energy data** (half-hourly).

- Daily average demand reduction (weekdays and weekends) by customer type and month adjusted for inter-annual weather and seasonality.
- Daily average peak reduction (weekdays and weekends) by customer type and month adjusted for inter-annual weather and seasonality.
- 1.2. Reduction in Diversity Factors for individuals and at different points in the topology of the network where network monitoring is installed.
- 1.3. Cluster analysis (Ward's Euclidian distance measure) of the profiles to see if they cluster differently pre and post tariff.

**2: Network modelling** (See 'DEAN' model)

- DEAM (Dynamic Energy Agents Model) investigates the energy demands of households connected to a local electricity substation.
- It is a decision support tool for DNOs for future network design.
- Takes: data on customers and weather.
- Produces: half-hourly load curves for substations
- Creates: estimates of load at distribution substations for each half hour for a set of representative day types for each year up to 2050.

**3: Qualitative ('How & Why') data**

- 3.1: Qualitative interview or focus group data from trial participants on how and why they are responding to the energy saving and energy shifting interventions.
- 3.2: Identifying how individuals' acceptance of DSM technologies varies depending on who controls them (TNOs, DNOs, suppliers, third-parties, the individuals themselves, etc)

**4: Quantitative ('How & Why') data**

- 4.1: Relating different aspects of energy saving and energy shifting to different characteristics of the trial groups including:
  - . Individuals' energy social capital
  - . Sociodemographic information
  - . Environmental factors (including building details)

These outcomes will have both process and programme benefits for smart metering.

Attachments	
Verbal Clarifications  (Consultants )	